CONTRIBUTIONS FROM THE GRAY HERBARIUM OF HARVARD UNIVERSITY—NO. CLXII.

IDENTIFICATIONS AND REIDENTIFICATIONS OF NORTH AMERICAN PLANTS

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(*Continued from page 197*)

Corydalis **Halei** (Small), Fernald & Schubert, comb. nov. *Capnoides Halei* Small in Bull. Torr. Bot. Cl. xxv. 137 (1898). *Corydalis aurea*, var. *australis* Chapm. Fl. So. U. S. ed. 2: 604 (1883). *Corydalis micrantha*, var. *diffusa* Fedde, Repert. Nov. Spec. x. 380 (1912).

Corydalis Halei seems to be a very distinct species of the southeastern Atlantic Coastal Plain and the Gulf Coastal Plain, extending inland, in sandy soil, to southeastern Missouri. Chapman well described it as *C. aurea* Willd., var. *australis* but the crested keel of the outer petals, as well as its tendency to produce cleistogamous inflorescences, place the species nearer *C. micrantha* (Engelm.) Gray. In fact, Dr. Gray united it with *C. micrantha* in the Synoptical Flora, i[1]. 98 (1895). *C. micrantha*, however, is an inland plant, found from Illinois to Nebraska, south to Tennessee, Arkansas, Oklahoma and Texas, with abundant and well developed foliage on the loosely ascending branches, the leafy summits mostly overtopping the longer terminal racemes. The latter are rather closely 3–12-flowered, and when fully expanded (in fruit) only 1.5–6 cm. long, with the lower and longer internodes 2–10 (–12) mm. long; its erect or strongly ascending fruiting pedicels are 0.5–3 mm. long, the thick-cylindric capsule scarcely torulose and 6–15 mm. long. *C. Halei*, on the other hand, is stiffly ascending, with leaves rapidly reduced upward, so that its terminal racemes overtop the foliage. The racemes quickly elongate to 0.5–2 dm., the 4–20 flowers and capsules all becoming remote, with the lower internodes of the rachis 1.5–2.5 cm. long. Its capsules, on pedicels 2–5 mm. long, are slender, torulose and 1.5–2.5 cm. long, often outwardly arching. An isotype of *C. micrantha*, var. *pachysiliquosa* Fedde, l. c., is a close match for an isotype of typical *C. micrantha*.

ARABIS PERSTELLATA E. L. Braun, var. **Shortii,** nom. nov. *Sisymbrium dentatum* Torr. in Short, 3rd Suppl. Cat. Pl. Kentucky, 338 (1833), not Allioni (1785). *A. dentata* (Torr.) Torr. & Gray, Fl. N. Am. i. 80 (1838), not de Clairville (1811)[1]. *Shortia dentata* Raf. Aut. Bot. 17 (1840), at least as to "Sisymbr. do Tor. et Arabis!" *Iodanthus dentatus* (Torr.) Greene, Pittonia, iii. 254 (1897).

A. PERSTELLATA, var. **phalacrocarpa** (M. Hopkins), comb. nov. *A. dentata*, var. *phalacrocarpa* M. Hopkins in RHODORA, XXXIX. 169 (1937).

Several acute botanists have called my attention to the fact that the name *Arabis dentata* (Torr.) Torr. & Gray (1838) is a later homonym, invalidated by de Clairville's *A. dentata* of 1811. I, naturally, passed the matter on to Dr. Milton Hopkins, before he became discouraged with the financial outlook for the university botanist and took to another and, we hope, more remunerative profession. Dr. Hopkins agreed with me that the very distinct and localized *A. perstellata* E. L. Braun in RHODORA, xlii. 47 (1940), while differing from typical and wide-ranging *A. dentata*, must be considered an extreme variety of the same series, many of the characters showing transitions in a large series of specimens. While it is anomalous that the plant of broad range should be treated as a geographic variety of a very local one, there seems to be no other specific name available. The usual source of many names which might be picked up, Rafinesque, seems to have been satisfied to retain the trivial name for his *Shortia dentata*. It would now be helpful if he had employed another.

ASCLEPIAS VIRIDIFLORA Raf., var. **linearis** (Gray), comb. nov. *Acerates viridiflora* (Raf.) Eaton, var. *linearis* Gray, Syn. Fl. ii[1]. 99 (1878).

[1] JOSEPH PHILIPPE DE CLAIRVILLE (1742–1830) was one of the most modest and self-effacing taxonomists I have ever encountered. His *Manuel d'Herborisation en Suisse et en Valais* (1811) was "Par l'Auteur de l'Entomologie helvétique", without indication of his name; while the 26-page Preface was unsigned—merely "21. Fevrier 1811". How unlike the modern counterparts of the visionary Bombastus Paracelsus who imagine that they are helping by publishing such combinations as *Phyton euphyton* Bombastus Superbus, ssp. *euphyton* (Bombastus Superbus) Bombastus Superbus, comb. nov., var. *euphyton* (Bombastus Superbus) Bombastus Superbus, comb. nov.,—based on *Phyton euphyton* Bombastus Superbus in Journ. Erudit. clv. 00.000 (194?). So far as I can find no genus was ever dedicated to *Bombastus Paracelsus*. CLAIRVILLEA was defined by DeCandolle with the dignified dedication: "Dixi in memoriam cl. de Clairville Galli botanici et entomologici de historiâ naturali Helveticâ benè meriti", DC. Prodr. v. 636 (1836).

Since the characters supposed to separate *Acerates* from *Asclepias* so definitely break down the preceding combination is needed. Whereas typical *Asclepias viridiflora* and its var. *lanceolata* (Ives) Torr. extend eastward to the Atlantic States, var. *linearis* is an inland extreme, from western Ontario and Manitoba south to Louisiana, Oklahoma and New Mexico.

TRIODANIS VERSUS SPECULARIA (PLATES 1049 and 1050).—Under the title *The Genus Triodanis Rafinesque, and its Relationships to Specularia and Campanula* Dr. Rogers McVaugh[1] has discussed in detail what he considers the strongest characters separating *Specularia* Heist. and *Triodanis* Raf. from *Heterocodon* Nutt. and *Campanula* L. Since the three species already recognized in the "Manual range" as belonging in *Specularia* (and some new ones which occur in Missouri) are all treated as belonging to *Triodanis*, I have found it necessary to study with some care the characters relied upon as separating the American and Eurasian *Triodanis* from the chiefly Eurasian and North African *Specularia*. McVaugh's statement of the strongest characters (as contrasted with those of the other two genera, which need not here be considered) are as follows:

> *Specularia* Heist. ex Fabr. Plants annual, branching above the middle; the flowers nearly sessile, clustered near the tips of the branches or corymbosely aggregated at the summit of the plant; flowers all open, or some imperfectly developed but open and not vestigial; corollas divided well below the middle, more or less rotate [this in contrast with *Heterocodon*]; filaments gradually widened to base, glabrous; capsules much elongate, linear, contracted at apex beneath the calyx-lobes, dehiscent at apex. Two species, western and southern Europe.
>
> *Triodanis* Raf. Plants annual, the branches, if any, from base or middle of the plant; flowers axillary, sessile or essentially so, the inflorescence spiciform; flowers from the lower nodes normally cleistogamous, with the corolla and androecium vestigial; some of the upper flowers or at least the terminal one usually open (all corollas sometimes open in *T. coloradoensis*), with expanded corollas divided below the middle [this, likewise, in contrast with the American *Heterocodon*]; filaments abruptly dilated and ciliate at base; capsule ovoid or clavate to linear or subulate, usually not abruptly contracted at apex, opening at the apex or (in *T. perfoliata*) at the middle or a little above it. Eight species, one chiefly Mediterranean, the others American.

If these are, indeed, distinct genera, separated on constant morphological characters, in the sense of genera of Eichler,

[1] McVaugh in Wrightia, i. 13–53 (1945)

DeCandolle, Bentham & Hooker and Engler & Prantl, we should hardly expect so many qualifying expressions or exceptions in the statement of differential generic characters, especially when, in the detailed accounts of species so many additional exceptions to the generic definition are stated. Taking up the reputed GENERIC differences in order, we, without monographic knowledge of details, note the following items.

1. "Plants annual, branching above the middle" in *Specularia*, as opposed to "branches, if any, from base or middle of the plant" in the reputed genus *Triodanis*. If Rafinesque had made such a distinction we should not be surprised; but, noting in passing, that small plants of European, southwestern Asiatic and North African[1] (not merely of "western and southern Europe") *Specularia Speculum-Veneris* (L.) Tanfani[2] (*S. speculum* A. DC.), the type of the genus *Specularia*, may be quite simple, we come to the very evident fact that of 59 individuals in the Gray Herbarium, these mostly validated by McVaugh, 29 *branch from the very base* (PLATE 1049, FIG. 1) or just above it. Similarly, the second species allowed by McVaugh to stay in *Specularia*, which he distinguished generically by "branching above the middle", the southern European (also North African—"a Barbariâ (Desf.)", A. DC. l. c. 349) *S. hybrida* (L.) A. DC., shows in the Gray Herbarium 40 individuals with strictly or primarily basal branching (PLATE 1049, FIG. 3) and 25 quite simple, but only 3 branching definitely near (not "above") the middle. When, furthermore, we note that in the first species taken up by Mc Vaugh (l. c. 25) as generically distinct from Old World *Specularia* (because, as to branching at least, *Specularia* has the "branching above the middle", whereas *Triodanis* has "the branches, if any, from base or middle" (not "above the middle")—when we note McVaugh's detailed description of his *Triodanis coloradoensis* (Buckl.) McVaugh (our PLATE 1050, FIG. 1) as "with branches . . . from the nodes just above the middle of the plant (usually

[1] "Syriâ . . . et Barbariâ"—A. DC. Mon. Camp. 347 (1830); "Palestinae (Boiss!) Aegypti . . . (Bal!) . . . Berythum Syriae . . . Africa borealis"—Boissier, Fl. Orient. iii. 959 (1875).

[2] Although the combination *Specularia Speculum-Veneris* appears in Index Kewensis, Suppl. 1 (1902) as made by Caruel in Parlatore, Fl. Ital. viii. 139 (1888), a check on the cover-page of vol. viii reveals the pertinent statement: "CAMPANULACEE. JASMINACEE. OLEACEE. PER **ENRICO TANFANI,**" this author also cited at the beginning of the *Campaniflore*, p. 15.

not with basal branches)", it almost seems as if we were reading the contradictory writings of the author of *Triodanis*. The branching, as most taxonomists would suspect in annual weedy plants, is not a constant or even nearly constant GENERIC character.

2. Flowers "nearly sessile, clustered near the tips of the branches or corymbosely aggregated" in *Specularia;* "axillary, sessile or essentially so, the inflorescence spiciform" in *Triodanis*. The first point, whether the flowers are sessile or nearly so is not a generic difference and was put in, apparently, to contrast with the peduncles of *Heterocodon;* but when one views the inflorescence of the basic *Specularia Speculum-Veneris* (our PLATE 1049, FIG. 2) and one of a species of the supposedly different genus *Triodanis*, *T. coloradoensis* (PLATE 1050, FIG. 2), both figures from specimens validated by McVaugh, and when he notes that Boissier, one of the truly great taxonomists, who clearly understood the Old World species, described *S. Speculum* δ. *racemosa* with "Inflorescentia . . . ut in *Sp. falcatâ* racemosa" (Boiss. l. c. 959), he stops to take a long breath. If *Specularia falcata* (Ten.) A. DC. is not a *Specularia* because its flowers are not "corymbosely arranged" as they are said to be in real *Specularia*, what about *S. Speculum*, var. *racemosa* which has the flowers racemose? And what about *Triodanis coloradoensis*, in which the flowers may be "corymbosely aggregated"? As a strong GENERIC difference this does not seem quite clear.

3. In *Specularia* "flowers all open, or some imperfectly developed but open and not vestigial"; in *Triodanis* "flowers from the lower nodes normally cleistogamous, with the corolla and androecium vestigial". This distinctive character of *Triodanis*, however, is at once weakened farther on in the same paragraph by the statement that "all corollas [are] sometimes open in *T. coloradoensis*," this fact again stated in the full description of the quite unconventional Texan *T. coloradoensis:* "flowers . . . all . . . prevailingly fertile and open". Cleistogamy is a common trait of some species or sections of genera or in some strains within species. In *Utricularia* it sometimes occurs in some plants and with every transition from truly cleistogamous flowers through intermediates to those with large and showy expanding corollas. In one large and perplexing American subgenus of

Panicum the later and reduced panicles of apparently cleistogamous spikelets are diagnostic, yet no sound student of the grasses has suggested setting up *Panicum*, subg. *Dicanthelium* as a true genus. In *Viola* certain sections exhibit abundant cleistogamy, certain others not; yet, even to Rafinesque, Greene, Rydberg and Small they were all *Viola*. Late in the season *Danthonia* produces within and at the bases of the old sheaths specifically distinctive cleistogamous flowers, but if one species somewhere should not do so, we should hardly treat it, on that character alone, as another genus. Innumerable showy-flowered herbs, annual, biennial or perennial, will, under certain conditions, produce insignificant cleistogamous flowers. Yet, so far as I have seen, most of these cleistogamous individuals (except in case of *Utricularia*) have not been sorted out as separate genera. If *Triodanis coloradoensis* would obligingly stop its misbehavior, the case for a genus separate from *Specularia* would be less weak; and the case would gain a little strength if the Old World *S. hybrida* (left by McVaugh in *Specularia*) would stop producing "flowers . . . considerably reduced in size and apparently . . . a step in the direction of truly cleistogamous flowers" (McVaugh, p. 19). A little more and the step may prove fatal.

4. The characters, corolla divided "well below the middle" and "below the middle", were obviously put in as a contrast with the really different corolla of *Heterocodon*. This section needs no further discussion.

5. In *Specularia* "filaments gradually widened to base, glabrous"; in *Triodanis* "filaments abruptly dilated and ciliate at base". However, in three of the eight species of *Triodanis* McVaugh allows that the filaments may gradually widen to base: *T. biflora* (R. & S.) Greene conceded to have "Filaments . . . , the proximal half gradually or abruptly expanded; and *T. texana* McVaugh and *T. Holzingeri* McVaugh with filaments similarly described. That leaves (unchecked by me) filaments "glabrous" as opposed to "ciliate at base". In *Campanula* the filaments are either abruptly dilated or gradually dilated at the ciliate or glabrous base.

6. In *Specularia* "capsule much elongate, linear, contracted at apex beneath the calyx-lobes, dehiscent at apex"; in *Triodanis* "ovoid or clavate to linear or subulate, usually not contracted at

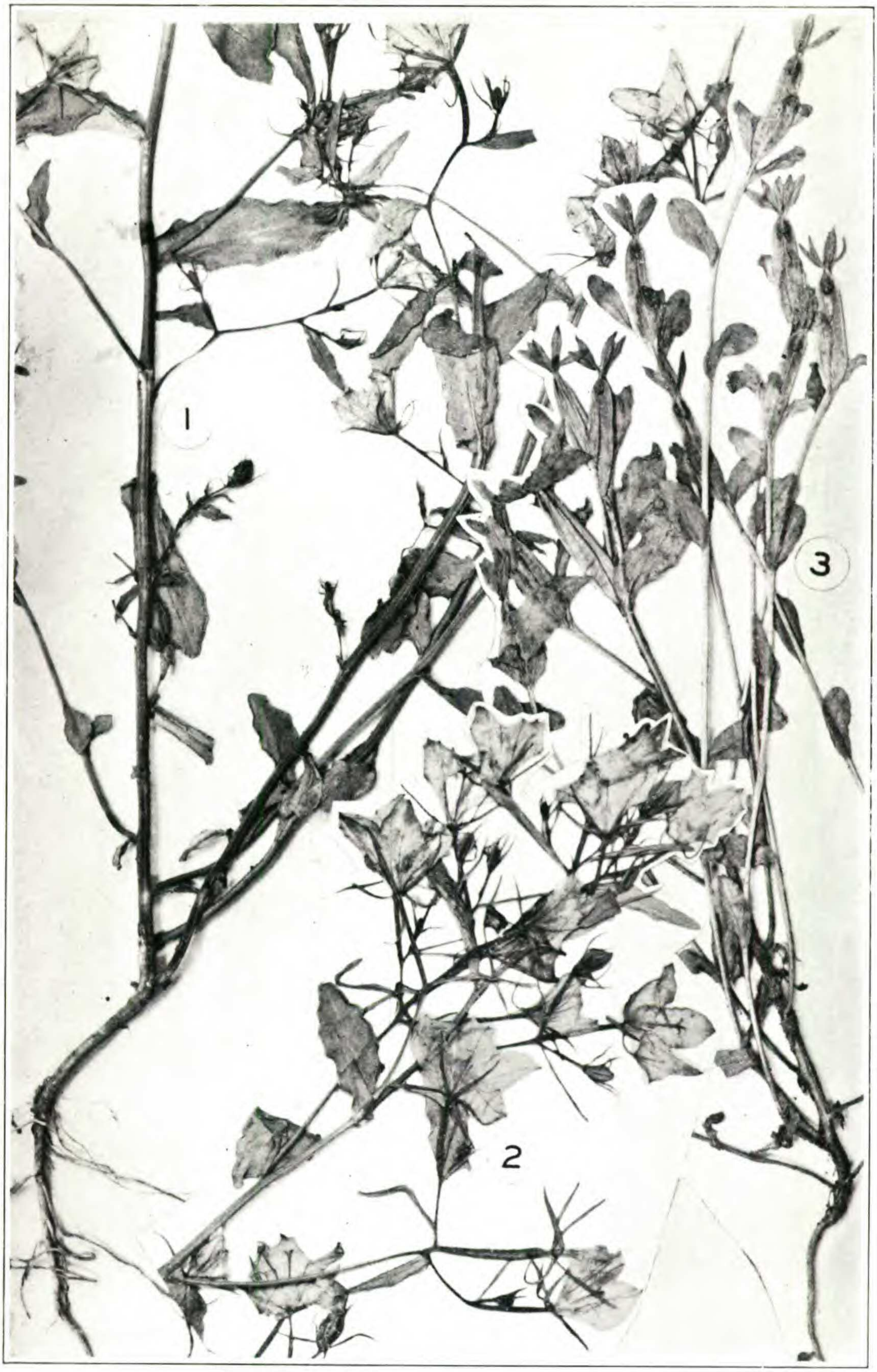

Photo. B. G. Schubert

SPECULARIA SPECULUM-VENERIS, both figs. × 1: FIG. 1, lower half of plant, showing basal branching, and FIG. 2, inflorescence, both from France.
S. HYBRIDA: FIG. 3, base, to show basal branching, from Italy.

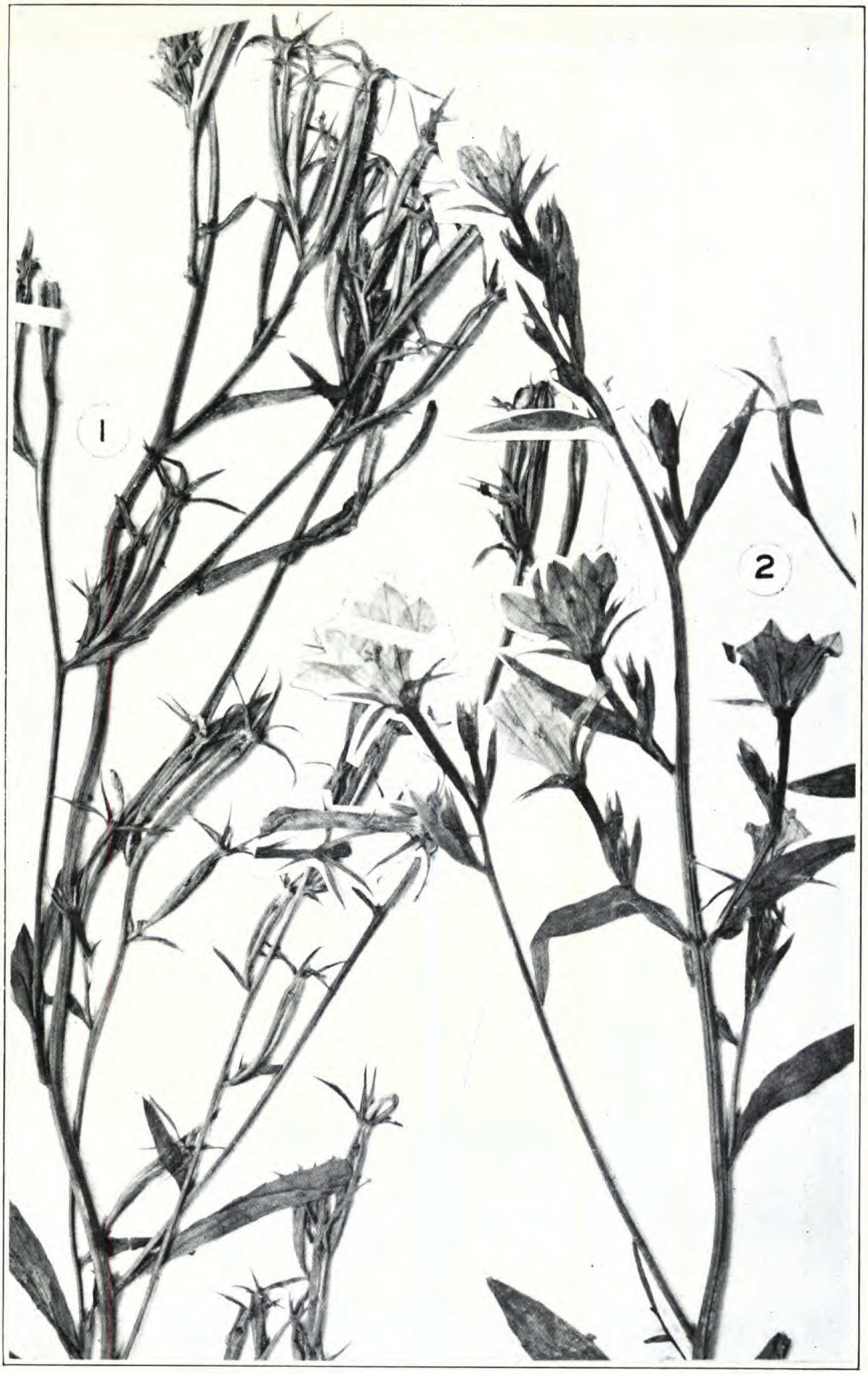

Photo B. G. Schubert

SPECULARIA COLORADOENSIS (= *Triodanis coloradoensis*), both figs. × 1: FIG. 1, median third of plant, showing branching "above the middle" and fruits "corymbiform aggregated"; FIG. 2, flowering inflorescence.

apex, opening at the apex or (in *T. perfoliata*) at the middle or a little above it". The apical opening is at once dismissed as occurring in both *Specularia* and *Triodanis*, though another character was overlooked in the latter, for in his key to the species of *Triodanis* emphasis is placed on "Capsule opening from base toward apex" in *T. falcata* (Ten.) McVaugh. Furthermore, since Alphonse DeCandolle in his classic Monographie des Campanulées (1830) described (p. 348) the capsule of *Specularia Speculum-Veneris* as either "cylindrica, medio inflata, basi et apice angustata" or "non propriè cylindricâ, sed subfusiformi, utrinquè angustatâ", while Boissier (l. c. 959) defined *S. Speculum*, β. *libanensis* A. DC. with "capsulae abbreviatae interdum oblongae", the definition of the genus *Specularia* as having the capsule "linear" (a measurement of flat surfaces, not solids) is not convincing, especially since *Triodanis* is allowed "linear or subulate" capsules. Nor is the tip of the capsule a strong generic character: "contracted at apex" in *Specularia*, "usually not contracted at apex" in *Triodanis*. For, as already quoted from Alphonse DeCandolle, the type-species of *Specularia* may have "capsulâ . . . utrinquè angustatâ", although his *S. hybrida* (which McVaugh leaves in *Specularia*) has "Capsula prismatica, basi apiceque abruptè constricta". Similar contrasts occur in American species of so-called *Triodanis:* for instance McVaugh's description of *T. coloradoensis* (embarrassing species, always getting in the way!) contains "Capsule . . . oblong-linear or clavate [as also that of *T. falcata* (Ten.) McVaugh] usually abruptly narrowed distally"; and they are "truncate" in *T. Holzingeri* McVaugh.

From this recapitulation of the stated characters supposed to separate a genus, *Triodanis* Raf., from *Specularia* it must be apparent that the so-called generic characters set up in support of such a segregation fail at altogether too many points. I find myself following Endlicher, Alphonse DeCandolle, Boissier, Bentham & Hooker and Schönland (in Engler & Prantl) in keeping *Triodanis* in *Specularia*. I cannot follow Rafinesque, Greene and McVaugh in considering it a clearly distinct genus. As my friend Pease remarks, "Too much present-day writing is quantitative rather than qualitative."

Although as a genus *Triodanis* seems to me very weak, the

species defined under it seem to me very strong. It becomes necessary, therefore, to transfer three of them to *Specularia*. I dislike so to do, for it would have been much more satisfactory if the author who clearly worked them out had himself placed them in *Specularia*.

SPECULARIA **lamprosperma** (McVaugh), comb. nov. *Triodanis lamprosperma* McVaugh in Wrightia, i. 42 (1945).

S. **texana** (McVaugh), comb. nov. *Triodanis texana* McVaugh, l. c. 43 (1945).

S. **Holzingeri** (McVaugh), comb. nov. *Triodanis Holzingeri* McVaugh, l. c. 45 (1945).

EXPLANATION OF PLATES 1031–1050

PLATE 1031, QUERCUS LAURIFOLIA Michx.: FIGS. 1 and 2, foliage and fruit, × 1, from Michaux's original plate; FIG. 3, fruit of *Q. rhombica* Sargent, from Sarg. Man. ed. 2, fig. 239; FIG. 4, leaf, × 1, from Michaux's original plate of Q. LAURIFOLIA, var. HYBRIDA, basonym of *Q. obtusa* (Willd.) Ashe.

PLATE 1032, QUERCUS LAURIFOLIA Michx.: FIGS. 1 and 2, fruiting branch and terminal leaves from Windman's Mill, south of Sunbeam, Southampton Co., Virginia, *Fernald & Long*, no. 11,323; FIG. 3, leaves of fruiting branch, originally and correctly identified as *Q. laurifolia*, later cited as a PARATYPE of *Q. rhombica* Sargent, and later identified as *Q. obtusa* (Willd.) Ashe, from Monroe, Ouachita Parish, Louisiana, *E. J. Palmer*, no. 8934.

PLATE 1033, QUERCUS LAURIFOLIA Michx.: FIG. 1, venation of lower leaf-surface, × 3, of Michaux's type, from photograph by *Cintract;* FIG. 2, foliage of type of *Q. rhombica* Sargent; FIG. 3, venation, × 3 (by transmitted light) of lower leaf-surface of type of *Q. rhombica*.

PLATE 1034, QUERCUS LAURIFOLIA Michx.?: portions of TYPE, × 1, of *Q. rhombica*, var. *obovatifolia* Sargent or *Q. obtusa* (Willd.) Ashe, var. *obovatifolia* (Sarg.) Ashe.

PLATE 1035, QUERCUS HEMISPHAERICA Bartram ex Willd., both figs. × 1: FIG. 1, *Q. aquatica,* var. from Michx. Hist. Chênes Am. Sept. t. 20, fig. 2, cited by Willdenow; FIG. 2, toothed leaves of young tree, from Gainesville, Florida, *Harbison*, no. 35 in Herb. Arn. Arb. as *Q. laurifolia*.

PLATE 1036, QUERCUS HEMISPHAERICA Bartram ex Willd., both figs. × 1: FIG. 1, fruiting branch, from Mayfield, Georgia, 1916, in Herb. Arn. Arb. as *Q. laurifolia;* FIG. 2, cups and acorn from vicinity of Eustis, Lake County, Florida, *Nash*, no. 1663, as *Q. Phellos*, in Herb. Arn. Arb. as *Q. laurifolia*.

PLATE 1037, STENANTHIUM GRAMINEUM (Ker) Morong: FIG. 1, portion of flowering plant, × 1, from Hendersonville, Henderson County, North Carolina, *Biltmore Herb.*, no. 5616[c]; FIG. 2, portion of leaf, × 2, from no. 5616[c]; FIG. 3, portion of fruiting plant, × 1, from "Pink Beds", 3500 feet alt., Pisgah Forest, North Carolina, *House*, no. 4040.

PLATE 1038, STENANTHIUM GRAMINEUM (Ker) Morong: FIG. 1, portion of inflorescence from near Merrifield, Virginia, *Allard*, no. 3234; FIG. 2, portion of leaf, × 2, from no 3234; FIG. 3, portion of fruiting inflorescence, × 1, from Pisgah Mountain, Buncombe County, North Carolina, *Biltmore Herb.*, no. 3501[b]; FIG. 4, portion of leaf, × 2, from no. 3501[b]; FIG. 5, portion of terminal fruiting raceme, × 1, from Springfield, Ohio, no. 11839, collector not stated; FIG. 6, portion of leaf, × 2, from same plant as FIG. 5.

PLATE 1039, STENANTHIUM GRAMINEUM, var. ROBUSTUM (S. Watson) Fernald: FIG. 1, portion of TYPE of *S. robustum* S. Watson, × 1, from Sligo Furnace,